

The Occurrence of *Salmonella* spp. in Superficial Cervical Lymph Nodes of Slaughtered Pigs.

Peter B. Bahnson¹, Claudia Snyder², Theresa Alexander²

1: The University of Illinois at Urbana-Champaign, 1008 West Hazelwood Drive, Urbana IL 61802 USA, E-mail: bahnson@uiuc.edu, Phone: 217-333-5774, Fax: 217-333-9796,

2: Farmland Foods, Inc., Monmouth, Illinois, USA.

Introduction: *Salmonella* species are commonly isolated from enteric lymph nodes and intestinal contents. However, *Salmonella* species have also been isolated from other lymph nodes, including peripheral lymph nodes that may be included in edible product (Wood, et al.). If the occurrence of *Salmonella* in these lymph nodes occurred at a substantial rate, it could pose a threat to food safety. We designed this study to detect the occurrence of *Salmonella* spp. in the superficial cervical lymph node group, nodes that can be included in the manufacturer of certain meat products originating from the front leg (picnic).

Methods and Materials: Lymph nodes were collected systematically from 300 fresh, uncured picnic hams over a one-month period. Samples were collected on Mondays, Tuesdays, and Fridays. Hams were selected by use of a 15-minute timer; when the timer sounded, an abattoir worker selected the next ham available on a processing line. Lymph nodes were exposed using a sanitized knife, extracted using sterile gauze, placed in individual whirl pack containers, and transported on ice to the laboratory.

Samples were pooled, combining 0.5 grams of lymph node from each of 5 individual pigs. Samples were crushed using a mallet, then combined with 22.5 ml of lactose broth, and incubated for 24 hours at 35 C. A 1ml sample was transferred to each of tetrathionate and R.V. broth, than incubated for 24 hours at 35 C. A commercially available ELISA kit (TECRA) was used to detect *Salmonella* spp. antigen specific to the genus level.

In addition, 6-10 lymph nodes collected from each of nine herds (79 total lymph nodes) from which carcass swabs and mesenteric lymph node cultures were also collected as part of a separate study (Bahnson et al.,2000). These samples were processed using a two step conventional enrichment process followed by plating onto selective media, (Fedorka-Cray, et al.) using the same procedure for caudal mesenteric and superficial cervical lymph nodes. Carcass swabs were collected using United States Dept. of Agric. standard procedures. *Salmonella* isolation rates were compared

among the three samples collected.

Results: No *Salmonella* spp. were detected among any of the 300 random samples processed (95% CI = 0 - 0.5%) nor any of the 89 samples for which herd identity was known. However, among these herds sampled, an average of 13.3% of mesenteric lymph node were culture positive to *Salmonella*, and three pigs total from two herds were *Salmonella* positive on carcass swabs.

Discussion: The failure to isolate *Salmonella* spp. in superficial cervical nodes contrasts with the estimated prevalence of *Salmonella* (9.9%) from caudal mesenteric lymph nodes in Illinois (Damman et al.). The detection kit used here was at least as sensitive as a conventional culture protocol for diagnostic isolates (Kerr et al., 1993), so it unlikely that sensitivity of the TECRA test would result in such a sharp contrast. A similar study of 560 slaughtered pigs, (Ionova et al., 1981) found no *Salmonella* in "prescapular" lymph nodes. Although *Salmonella* spp. have been found in lymph nodes distant from the gut, Wood et al. found them no longer than two weeks post infection. A prevalence of less than 0.5% suggests that the superficial cervical lymph node group represented a minor risk to food safety.

References:

- Bahnson P.B., Proescholdt T., Jensen H.H., Unnevehr L.J. and Omran L.M. The association of *Salmonella* culture status of mesenteric lymph nodes and carcass swabs of pigs at a commercial slaughter plant. Proceedings, Int. Symp. Vet. Epidemiology and Economics, Aug. 7-11, 2000, Breckenridge, CO, abstract #500.
- Damman D.J., Bahnson P.B., Isaacson R.I., Troutt H.F., Weigel R.M. and Kim, J.Y. (1999): Evaluating the prevalence of *Salmonella* spp. at slaughter. Proc. Am. Assoc. Swine Pract., Feb 28- Mar 2, 1999, p. 391.
- Fedorka-Cray PJ, Dargatz DA, Thomas LA and Gray JT (1998): Survey of *Salmonella* serotypes in feedlot cattle. J Food Prot, 62:5;525-530.
- Ionova I., Monov G., Kunev Z.H., Kholodenko V. and Goranov I. (1981): *Salmonella* carrier state in healthy slaughtered swine and calves, in relation to the distribution of *Salmonella* in tissues. Veterinarnomeditsinski-Nauki. 18: 7, 98-104.
- Kerr S., Ball H.J. and Porter R. (1993): A comparison of three *Salmonella* antigen-capture ELISAs and culture for veterinary diagnostic specimens. J Appl Bacteriol, 75(2); 164-7.
- Wood R.L., Pospischil A. and Rose R. (1989): Distribution of persistent *Salmonella typhimurium* infection in internal organs of swine. Am. J. Vet. Res. 50: 7, 1015-1021.